

### REMARKS

The specification has been amended at pages 8 and 9 to make the description of the elements in the Figures referred to on these pages consistent with the previously used terms for those same elements.

The specification has been amended at page 10 to delete the redundant definition.

The Abstract of the Disclosure has been amended to place it in better form. A copy of the Abstract in which the changes identified above have been made is enclosed.

Claims 1 and 14 have each been amended to recite that the claimed apparatus and method are directed to monitoring binder dosage and distribution during the production of composite materials. Support for this amendment is found at page 6, lines 10-13 of the specification.

Claims 1 and 14 have further been amended to replace the word "substrate" with "composite-forming material to which binder has been applied" in view of the above amendment to ensure proper antecedent basis. Support for this amendment is found at page 9, lines 26-29 of the specification.

Claims 1 and 14 have also been amended to recite that component e) is a "device capable of" correlating video images to binder distribution and dosage. Support for this amendment is found at page 4, lines 24-26 of the specification.

Claim 1 has been amended to delete the references to previously listed elements by letter in accordance with the Examiner's suggestion.

Claims 2-13 have been amended to delete the references to elements listed in Claim 1 by letter in accordance with the Examiner's suggestion.

Claim 14 has been amended to insert the word "step" before the letters used to refer to steps previously recited in that claim.

Claims 18 and 19 have been amended to insert the word "step" before the letters used to refer to steps specified in Claim 14.

Claim 17 has been amended to replace "MDI" with "polyphenylene polymethylene polyisocyanate" in accordance with the Examiner's suggestion.

Each of the above-described amendments has been made in an effort to place the specification and claims in better form. No new subject matter has been added.

The present invention relates to an apparatus for determining binder dosage and distribution on a composite-forming material during production of a composite material and to a method for monitoring binder dosage and distribution on a substrate using this apparatus. This apparatus is composed of a UV light source positioned so that the ultraviolet waves will come into contact with a substrate to which binder has been applied, a filter which blocks all but the visible light waves emitted by fluorescence of the binder, a lens for imaging the visible light onto a focal plane, a video camera which converts the visible light waves to an electronic signal and a device capable of correlating that electronic signal to binder dosage and distribution.

The drawings have been objected to for the reasons listed on PTO Form 948. Corrected drawings in which the bases for the objections listed by the Draftperson have been removed will be submitted upon receipt of a notice that this case is otherwise in condition for allowance.

The drawings were further objected to as failing to comply with 37 CFR 1.84(p)(4) on two specific bases. Applicants believe that the amendments made to the specification herein remove each of these bases.

More specifically, the first basis for this objection was that reference number **2** was used to designate both lamps (page 6, line 22) and UV source (page 8, line 26).

The lamps referred to at page 6, line 22 of the specification are also the UV light source discussed at page 8, line 26. The specification at page 8, line 26 has been amended to make the terminology used therein more closely correspond to the language at page 6, line 22 used to describe the feature identified by reference number **2**. Reference number **2** is not therefore used to identify two different elements of the apparatus of the present invention. Applicants therefore believe that the basis for this objection has been removed.

The second basis for this objection is that reference number 3 has been used to designate both the sample (page 6, line 23) and the composite-forming material (page 9, line 26).

The sample referred to at page 6 is **the same** as the composite-forming material referred to at page 9. Applicants have amended the specification at page 9 to make the language used to refer to the element identified by reference number 3 correspond more closely to that used at page 6 to refer to that same element. It is believed that this amendment removes the basis for this objection to Applicants' drawings.

Withdrawal of the objections to Applicants' drawings on the basis of 37 CFR 1.84(p)(4) is therefore requested.

The disclosure was objected to on the basis of the redefinition of the term "polymeric MDI" at page 10, line 15. Applicants have amended their specification to delete the definition of "polymeric MDI" at page 10, line 15 in accordance with the Examiner's requirement. It is believed that this amendment removes this basis for the objection to Applicants' specification.

Withdrawal of this objection is therefore requested.

The specification was further objected to on the basis of improper trademark usage. Applicants respectfully submit that their usage of the trademarks Makrolon, Lexan and Mondur 541 is correct.

A trademark is used to identify the source of a particular product. Applicants submit that the trademarks noted in the Office Action are used in a manner which clearly identifies the nature of the product and its source. More specifically, at page 15, lines 22-23, "Makrolon" is correctly used as an adjective in the expression "Makrolon polycarbonate". At page 11, lines 14-17, "Makrolon" and "Lexan" are identified as the commercial names of commercially available polycarbonate plastics having a UV stabilizer and the companies from which those materials are available are identified. At page 15, lines 5-6 and lines 19-20 of the specification, "Mondur 541" is clearly identified as a polymeric MDI which is commercially available from Bayer Corporation.

Applicants' trademark usage is therefore correct. Withdrawal of this objection is therefore requested.

The Abstract of the Disclosure was objected to because of form and the use of legal phraseology. Applicants have amended the Abstract to place it in better form and to remove the basis for this objection.

Withdrawal of this objection is therefore requested.

Claim 17 was objected to on the basis that the term "polymeric MDI" should be changed to "polyphenylene polymethylene polyisocyanate".

Applicants do not believe that the required change is necessary in view of the fact that the expression "polymeric MDI" is clearly defined in their specification. Nonetheless, Claim 17 has been amended in accordance with the requirement made in the Office Action in an effort to expedite the prosecution of this case.

Withdrawal of this objection is therefore requested.

The claims were further objected to on the basis that the reference characters are not enclosed within parentheses.

The terms which Applicants used in the claims were used to refer to elements previously listed or listed in the claim from which they depended. These reference numbers did not refer to the numbers given in the drawings or used in the descriptive portion of the specification.

Applicants have, however, amended Claims 1-13 to delete the letter references to which objection was made. Claims 14, 18 and 19 have been amended to clearly recite that the reference letters identify steps recited in the claims. It is believed that these amendments remove this basis for objection.

Withdrawal of this objection is therefore requested.

Claims 1-21 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The specific basis for this rejection is use of "source a)", "lens c)", etc.

Applicants have amended their claims to remove the basis for this rejection.

Withdrawal of this rejection is therefore requested.

Claims 1, 2, 6, 7, 9, 11-15, 19 and 20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by DeVries et al (U.S. Patent 5,532,817). Applicants believe that their claims as amended herein clearly distinguish the present invention from the method and apparatus disclosed by DeVries et al.

DeVries et al discloses a method for optically inspecting the resin portion of an article in which the article is exposed to a light source at a first wavelength and the emitted light (at a different wavelength) is measured. The resin being inspected must include a moiety having fluorescent properties.

The resin being inspected in the DeVries method is a fully formed polymer which coats a pre-formed substrate such as a silicon wafer. The binder used in Applicants' claimed invention is not a fully formed polymer. That binder is in intimate contact with composite-forming materials (such as wood strands) with which it is capable of reacting to form a composite material. The nature of the materials being inspected by the DeVries method is therefore significantly different from that being monitored in accordance with Applicants' claimed invention.

The DeVries et al method is used to inspect for surface characteristics such as thickness and concentration of the resin on the substrate surface. Applicants' method is used to determine the distribution of the reactive binder throughout the substrate (i.e., not just on the substrate surface). DeVries et al does not employ a material which is reactive and dispersed throughout the sample being inspected. The teachings of DeVries et al can not therefore be construed as disclosing any means for determining the dosage and distribution of a material such as the binder required in Applicants' invention.

Applicants would further note that DeVries et al does not teach or suggest that the disclosed method could be used to inspect materials during actual production of those materials. In contrast, Applicants' apparatus and method are intended to be used during the actual production of the composite materials being monitored.

It is indicated in the Office Action that DeVries et al discloses a means for correlating recorded images to binder dosage and distribution at column 7, line 50-

column 8, line 3 and at column 8, lines 33-37. (Page 5, lines 5-6 of the Office Action) Applicants respectfully disagree.

At the cited portions of the reference, DeVries et al discusses commercial automated systems in which an image is stored on a computer and that image is enhanced, magnified and compared to another image. None of the systems discussed by DeVries at columns 7 and 8, correlates binder dosage and distribution on particulate materials of the type used to produce composite materials with signals derived from a video image. }

Indeed, DeVries et al teaches at column 8, lines 33-37 that the method disclosed therein can be used to determine "thickness of the resin, coating uniformity, particulate contamination, pin holes, gels, bubbles, clearing of vias, cracking, blisters, wrinkles and delamination". Distribution of a binder on particulate materials is clearly "missing" from the types of determinations which DeVries et al teaches to be possible with the disclosed method. }

A key feature of Applicants' invention is the device for correlating video images to binder distribution and dosage on composite-forming material to which that binder has been applied during actual production of the composite material. This feature is not taught or suggested by DeVries et al. This key feature of Applicants' invention which is "missing" from the teachings of DeVries et al is required in each of the embodiments of the invention claimed in Claims 1, 2, 6, 7, 9, 11-15, 19 and 20. The teachings of DeVries et al do not therefore anticipate or render obvious Applicants' invention as claimed in Claims 1, 2, 6, 7, 9, 11-15, 19 and 20.

Applicants would further note that DeVries et al requires use of a UV light source at a specific wavelength. Applicants' claimed apparatus is not limited to use of UV light at one wavelength. UV light having a range of wavelengths may be used in the present invention. } Not clear

DeVries et al does not teach or suggest that UV light having a range of different wavelengths could be used in the disclosed method. The teachings of DeVries et al do not therefore anticipate Applicants' claimed invention. } NL

Withdrawal of this rejection is therefore requested.

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVries et al (U.S. Patent 5,532,817) in view of Bolton et al (U.S. Patent 4,824,209). Applicants believe that their invention as presently claimed is patentably distinct from the combined teachings of DeVries et al and Bolton et al.

The DeVries et al reference has already been discussed and distinguished from the claimed invention in Applicants' response to the rejection of Claims 1, 2, 6, 7, 9, 11-15, 19 and 20 under 35 U.S.C. § 102(b).

In short, DeVries et al does not teach or suggest an apparatus having the device for correlating collected video images to binder dosage and distribution on a composite-forming material during a process for the production of composite materials.

Bolton et al discloses a light source assembly. Bolton et al does not teach or suggest anything with respect to correlating visible light to binder dosage or distribution. The teachings of Bolton et al can not therefore be construed in any manner which would suggest the correlation means required in Applicants' invention.

Neither Bolton et al nor DeVries et al teaches a key feature of Applicants' claimed invention, i.e., the device for correlating collected visible light to binder dosage and distribution on a composite-forming material. The combined teachings of these references can not therefore be construed in any manner which would suggest Applicants' invention to one of ordinary skill in the art. Applicants' invention is not therefore rendered obvious by the combined teachings of DeVries et al and Bolton et al.

Withdrawal of this rejection is therefore requested.

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVries et al (U.S. 5,532,817) in view of Duclos et al (U.S. 5,818,577). Applicants submit that their invention as presently claimed is patentably distinct from the combined teachings of these references.

DeVries et al has already been discussed and distinguished from the claimed invention. This discussion will not be repeated.

Duclos et al discloses a method and apparatus for detecting contamination in quartz sand. Duclos et al does not teach or suggest anything with respect to

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correlating the dosage and distribution of a reactive binder material on a composite-forming material during a process for the production of a composite material. That is, Duclos et al does not supply the teaching of Applicants' required correlation device which is "missing" from the teachings of DeVries et al.

Neither DeVries et al nor Duclos et al teaches or suggests an apparatus for monitoring binder dosage and distribution on a composite-forming material during production of the composite material which includes a device capable of correlating video images to binder dosage and distribution. Such correlation device is a key feature of Applicants' invention.

References which do not teach or suggest a key feature of a claimed invention can not be combined in a manner which would render that claimed invention obvious. The teachings of DeVries et al and Duclos et al can not therefore be combined in a manner which would render Applicants' claimed invention obvious.

Withdrawal of this rejection is therefore requested.

Claims 5, 8, 10 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVries et al (U.S. 5,532,817) in view of Burchill (EP 0 458 474). Applicants believe that their invention as presently claimed is patentably distinct from the combined teachings of DeVries et al and Burchill.

DeVries et al has already been discussed and distinguished over the claimed invention. This discussion will not be repeated.

Burchill discloses an apparatus for detecting the presence of a modifier ingredient on a substrate surface such as PVC which has been applied to a cladding on a building. Burchill does not teach or suggest an apparatus in which distribution of a reactive material such as the binder required in Applicants' invention on particulate material such as wood strands, etc. of the type useful in producing composite materials is determined.

Neither DeVries et al nor Burchill teaches or suggests an apparatus or method for determining distribution and dosage of a reactive material such as a binder on particulate materials such as the composite-forming material required in Applicants' claimed invention. Neither of these references teaches or suggests an apparatus having or a method employing the device for correlating a video image

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with binder dosage and distribution which is required in Applicants' claimed invention. The teachings of DeVries et al and Burchill can not therefore be combined in any manner which would render Applicants' claimed invention obvious.

Withdrawal of this rejection is therefore requested.

Claims 16 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVries et al (U.S. 5,532,817) in view of Barrera et al (U.S. 6,001,936). Applicants believe that their invention as presently claimed is patentably distinct from the combined teachings of DeVries et al and Barrera et al.

DeVries et al has already been discussed and distinguished from the claimed invention. This discussion will not be repeated.

Barrera et al discloses an interpenetrating polymer network composed of a continuous first phase made up of a flexible polymer and a second phase composed of a fluorescent dye and a polymer which enhances the durability of the fluorescent dye. Barrera et al does not teach or suggest anything with respect to an apparatus for monitoring dosage of a reactive material such as a binder on a composite-forming material. Barrera et al does not teach or suggest any device capable of correlating video images to binder dosage and distribution of the type which is required in Applicants' claimed invention.

Neither DeVries et al nor Barrera et al teaches or suggests an apparatus or a method for monitoring binder dosage and distribution on a composite-forming material. Neither of these references teaches or suggests the device for correlating a video image to binder dosage and distribution which is required in Applicants' claimed invention. The teachings of DeVries et al and Barrera et al can not therefore be combined in any manner which would render Applicants' claimed invention obvious.

Withdrawal of this rejection is therefore requested.

Claim 21 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVries et al (U.S. 5,532,817) in view of Krueger et al (U.S. 4,415,516). Applicants maintain that their invention as claimed herein is patentably distinct from the combined teachings of DeVries et al and Krueger et al.

DeVries et al has already been discussed and distinguished from the present invention. This discussion will not be repeated.

Krueger et al discloses a method and apparatus for making aligned flake composite wood material. Krueger et al does not teach or suggest an apparatus for monitoring distribution and dosage of a reactive material on a composite-forming material. Krueger et al does not teach or suggest an apparatus having the device for correlating a video image to binder dosage and distribution which is required in Applicants' claimed invention.


Neither DeVries et al nor Krueger et al teaches or suggests an apparatus having the device for correlating a video image to binder dosage and distribution which is required in Applicants' claimed invention. The teachings of these references can not therefore be combined in any manner which would render Applicants' claimed invention obvious.

Withdrawal of this rejection is therefore requested.

In view of the above amendments and remarks, reconsideration and allowance of Claims 1-21 are respectfully requested.

Respectfully submitted,

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